What is claimed is:

1. A biocompatible bone graft material comprising a biocompatible, resorbable polymer, and the oxidation-reduction reaction product of at least one metal cation, at least one oxidizing agent, and at least one oxidizable precursor anion.
2. The graft material of claim 1 wherein said polymer is collagen.
3. The graft material of claim 1 wherein the polymer is at least 85% Type I bovine collagen.
4. The graft material of claim 3 wherein said Type I bovine collagen is native fibrous collagen, soluble collagen, reconstituted collagen, or combinations thereof.
5. The graft material of claim 4 wherein said Type I bovine collagen is predominantly fibrous collagen.
6. The graft material of claim 2 wherein the reaction product and collagen have a mass ratio of about 70:30.
7. The graft material of claim 2 wherein the reaction product and collagen have a mass ratio of about 80:20.
8. The graft material of claim 2 wherein said reaction product and collagen have a mass ratio of about 90:10.
9. The graft material of claim 1 having up to about 30% by weight of biocompatible polymer.
10. The graft material of claim 1 having up to about 20% by weight of biocompatible polymer.
11. The graft material of claim 1 having up to about 10% by weight of biocompatible polymer.
12. The graft material of claim 1 having macro-, meso-, and microporosity.
13. The graft material of claim 1 wherein said reaction product is calcium phosphate.

14. The graft material of claim 1 wetted with a fluid comprising bone marrow aspirate, blood, or saline.
15. The graft material of claim 1 having a cylindrical, block, or discoid shape.
16. The graft material of claim 1 further comprising a mesh or plate.
17. The graft material of claim 16 comprising a mesh or plate comprised of a metal or polymer.
18. A biocompatible bone graft material comprising biocompatible, resorbable collagen, and calcium phosphate.
19. The bone graft material of claim 18 wherein said collagen is at least 85% Type I bovine collagen.
20. The bone graft material of claim 19 wherein said Type I bovine collagen is a mixture of native fibrous collagen, soluble collagen, or reconstituted collagen.
21. The bone graft material of claim 18 wherein said reaction product and collagen have a mass ratio of about 70:30.
22. The bone graft material of claim 18 wherein said reaction product and collagen have a mass ratio of about 80:20.
23. The bone graft material of claim 18 wherein said reaction product and collagen have a mass ratio of about 90:10.
24. The bone graft material of claim 18 having up to about 30% by weight of collagen.
25. The bone graft material of claim 18 having up to about 20% by weight of collagen.
26. The bone graft material of claim 18 having up to about 10% by weight of collagen.
27. The bone graft material of claim 18 having macro-, meso-, and microporosity.

28. The bone graft material of claim 18 wetted with a fluid comprising bone marrow aspirate, blood, or saline.
29. The bone graft material of claim 18 having a cylindrical, block, or discoid shape.
30. The bone graft material of claim 18 also comprising a mesh or plate.
31. The bone graft material of claim 30 comprising a mesh or plate comprised of a metal or polymer.
32. A biocompatible bone graft material comprising biocompatible, resorbable collagen and calcium phosphate having macro-, meso-, and microporosity.
33. The bone graft material of claim 32 wherein said collagen is Type I bovine collagen.
34. The bone graft material of claim 32 wherein said phosphate and collagen have a mass ratio of about 90:10 to about 70:30.
35. The bone graft material of claim 34 wherein said phosphate and collagen have a mass ratio of about 85:15 to about 75:25
36. The bone graft material of claim 32 having up to about 30% by weight of collagen.
37. The bone graft material of claim 32 having up to about 20% by weight of collagen.
38. The bone graft material of claim 32 having up to about 10% by weight of collagen.
39. The bone graft material of claim 32 wetted with a fluid comprising bone marrow aspirate, blood, or saline.
40. The bone graft material of claim 32 having a cylindrical, block, or discoid shape.
41. The bone graft material of claim 32 also comprising a metal mesh.
42. The bone graft material of claim 41 wherein said metal comprises titanium.

43. The bone graft material of claim 32 wherein the bone graft material is shredded.

44. A composite biocompatible graft comprising a biocompatible, resorbable substantially homogenous blend of a first polymeric material and a second material having interconnected macro-, meso- and microporosity.

45. The graft of claim 44 wherein the polymeric material is Type I bovine collagen.

46. The graft of claim 44 having up to about 80% of the second material.

47. The graft of claim 46 having a total porosity of at least 70%.

48. The graft of claim 47 wherein the second material is beta tri-calcium phosphate.

49. The graft of claim 47 further comprising a titanium mesh affixed to the graft.

50. A method for restoring or repairing bone in a mammal comprising:

- placing into a bony space a bone graft material comprising biocompatible, resorbable collagen, the oxidation-reduction reaction product of at least one metal cation, at least one oxidizing agent, and at least one oxidizable precursor anion.

51. The method of claim 50 wherein said collagen is at least 85% Type I bovine collagen.

52. The method of claim 51 wherein said Type I bovine collagen is a mixture of native fibrous collagen, soluble collagen, or reconstituted collagen.

53. The method of claim 50 wherein said reaction product and collagen have a mass ratio of about 90:10 to about 70:30.

54. The method of claim 50 wherein said reaction product and collagen have a mass ratio of about 85:15 to about 75:25.

55. The method of claim 50 having up to about 30% by weight of collagen.

56. The method of claim 50 having up to about 20% by weight of collagen.

57. The method of claim 50 having up to about 10% by weight of collagen.

58. The method of claim 50 wherein said graft material has macro-, meso-, and microporosity.

59. The method of claim 50 wherein said reaction product is calcium phosphate.

60. The method of claim 50 further comprising allowing said graft material to be wetted with a fluid comprising bone marrow aspirate, blood, or saline.

61. The method of claim 50 wherein said graft material has a cylindrical, block, or discoid shape.

62. The method of claim 50 also comprising a mesh or plate comprised of a metal or polymer.

63. A bone graft for long bone reinforcement comprising a biocompatible, resorbable sleeve of a polymer and beta-tricalcium phosphate, the graft having interconnected macro-, meso-, and microporosity.

64. The bone graft of claim 63 further comprising a mesh affixed to the surface of the sleeve.

65. The bone graft of claim 63 wherein said mesh is immersed in the graft.

66. The bone graft of claim 64 wherein the mesh is of titanium, stainless steel, nitinol, a composite polymer, or polyetheretherketone.

67. The bone graft of claim 63 wherein the polymer is collagen.

68. The bone graft of claim 63 wherein the beta-tricalcium phosphate and polymer are in a mass ratio of about 90:10 to about 70:10.

69. The bone graft of claim 69 wherein the beta-tricalcium phosphate and polymer are in a mass ratio of about 85:15 to about 75:25.

70. The bone graft of claim 63 wherein the cross-section of the sleeve is in the shape of a crescent shape moon.

71. A graft for the restoration of bone in the form of a shaped body, the shaped body comprising a polymer and beta-tricalcium phosphate, the graft having interconnected macro-, meso-, and microporosity; the body shape being selected to conform generally to a mammalian, anatomical tissue structure.
72. The graft of claim 72 further comprising a mesh affixed to a side of the polymer.
73. The graft of claim 73 wherein the mesh is of titanium, stainless steel, nitinol, a composite polymer, or polyetheretherketone.
74. The graft of claim 72 wherein the polymer is collagen.
75. The graft of claim 72 wherein the body shape is a disk, semi-sphere, semi-tubular, or torus.
76. The graft of claim 72 wherein the body shape conforms to the acetabulum.
77. The graft of claim 72 wherein the beta-tricalcium phosphate and polymer are in a mass ratio of about 90:10 to about 70:10.
78. The graft of claim 77 wherein the beta-tricalcium phosphate and polymer are in a mass ratio of about 85:15 to about 75:25.